






GARMENTS

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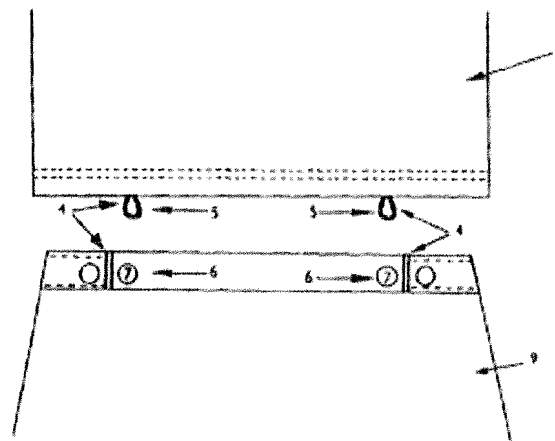
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Abstract of WO0032067

The invention relates to garments (1) which may be connected and disconnected to related garments. Such garments (1) are particularly useful when swimming or surfing. The garments (1) comprise a waistband located at and extending about the lower extremity of the garment (2) and a connector (5) located on or adjacent the waistband for connection with a second connector (6) on another garment (3).



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(54) Title: GARMENTS			
<p>The diagram illustrates a garment (1) with a waistband (2) and a connector (5) for connection with another garment (3) via a second connector (6). The diagram includes labels 1, 2, 3, 4, 5, 6, 7, and 9.</p>			
(57) Abstract <p>The invention relates to garments (1) which may be connected and disconnected to related garments. Such garments (1) are particularly useful when swimming or surfing. The garments (1) comprise a waistband located at and extending about the lower extremity of the garment (2) and a connector (5) located on or adjacent the waistband for connection with a second connector (6) on another garment (3).</p>			

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Garments

Field of the invention

The invention relates to garments. More particularly the invention relates to a garment
5 which may be connected and disconnected to related garments. Such garments are particularly useful when swimming or surfing.

Background of the invention

Long board surfing was known for a very long time in Polynesia, but became more generally known in the 1920's and 1930's, perhaps even before that, but surfing only
10 seriously started in the 1950's and 1960's. From this time, surfers wore a top or vest for two reasons. The first was to provide protection from sunburn and the second was to protect the surfer's stomach and chest from developing a rash from the wax on the board when paddling out to catch a wave. With increasing knowledge and understanding of the cause of skin cancer, protection from sunburn while surfing has become very important.

15 Generally, the protective tops worn by surfers are constructed of very stretchable material such as lycra or neoprene, so movement is not inhibited. These surf tops are worn with shorts or bathers and are not connected to the shorts or bathers worn by the surfer. Accordingly, as the surfer paddles out, a gap commonly develops between the bathers and the top as a result of the wash of the waves, or the paddling movement of the surfer. This
20 gap enables sunburn and/or a rash to develop in that area.

Even the application of sunburn cream will not always prevent sunburn as sunburn cream gradually washes off in water.

For some time now, wetsuits have also been available and have been worn by surfers to prevent sunburn and also to prevent a rash developing. However, wetsuits are only suitable
25 for colder waters where additional warmth is required. In warmer waters, a wetsuit would cause overheating of the surfer and resultant lethargy. A surf top is also sometimes worn underneath a wetsuit to prevent the wetsuit causing chafing.

Surf shorts and a surf top are often worn together in warmer areas where a wetsuit is inappropriate.

It can be seen from the above, that it is very difficult for surfers to protect themselves from sunburn and a rash, particularly in warmer waters where wetsuits are not suitable.

Similar problems are encountered in all forms of water sport including water skiing, swimming, the use of jet skis, lifesaving and the like.

5 **Object of the invention**

It is an object of the present invention to provide a garment which ameliorates some of the above problems.

Summary of the invention

According to a first form of the invention a garment top is provided for covering at least a
10 part of the torso of a wearer, the top comprising:

- (a) a waistband located at and extending about the front and rear lower extremity of the top; and
- (b) a first connector located on or adjacent the waistband in either the front or rear lower extremity of the top for connection with a second connector on a pair of
15 pants.

According to a second form of the invention a pair of pants is provided for covering at least a part of the lower torso and legs of a wearer, the pants comprising:

- (a) a waistband located at and extending about the front and rear upper extremity of the pants; and
- 20 (b) a second connector located on or adjacent the waistband in either the front or rear upper extremity of the pants for connection with the first connector on a top.

According to a third form of the invention a connectable top and pants combination is provided comprising:

- (a) a garment top for covering at least a part of the torso of a wearer, the top
25 comprising:
 - (i) a waistband located at and extending about the front and rear lower extremity of the top; and

- (ii) a first connector located on or adjacent the waistband in either the front or rear lower extremity of the top;
- (b) a pair of pants for covering at least a part of the lower torso and legs of a wearer, the pants comprising:
 - 5 (i) a waistband located at and extending about the front and rear upper extremity of the pants; and
 - (ii) a second connector located on or adjacent the waistband in either the front or rear upper extremity of the pants.

wherein the first connector and second connector are engagable to connect the top
10 and pair of pants.

The term "waistband" used herein is intended to include bands or seams of material or other construction which are capable of serving as a site for the connectors. At the site where the connectors are attached to the top or pants, the waistband may be reinforced. The reinforcement is preferably a strong and flexible material. More preferably the
15 reinforcement is a piece of rubber.

Preferably, the top is a rash vest of the type used in surfing.

Preferably, the pair of pants are shorts, typically board shorts of the type used in surfing.

Accordingly, by having the connection between the top and the pair of pants either in the front or rear of the garments the exposure of the body between these, particularly in the rear
20 area, is significantly reduced or eliminated. It will be understood that one or more connectors can be used on each of the garments to achieve the desired connection.

Preferably the first connector and second connector are adapted to provide a resilient connection between the top and the pants. This resilience is desirable so that the movement of the wearer is not inhibited. This is particularly desirable where the garments are used in
25 sports such as surfing where freedom of movement is paramount to performance.

Preferably, this resilient connection may be achieved by one of the connectors being fabricated at least in part by a resilient material whilst the other connector is a rigid attachment. For example, one of the connectors may include a loop of elasticised material

anchored to one of the garments and the other connector is a headed protrusion over which the elasticised loop may be retained.

Preferably, the connectors are positioned on their respective garments such that when connected, the top waistband is caused to extend over the pants waistband. In this way the chances of the skin of the wearer being exposed to harmful sunlight is minimised. As such
5 the location of these connectors on the rear of the top and the pants is most preferred.

One arrangement of this invention has a loop of elastic material anchored to the upper edge of the top waistband inside the rear of the top but not extending down below the lower edge of the top waistband. The other connector in this arrangement is a button sewn onto the rear
10 of the pants waistband or a press fit type button attached at that location, typically midway along its width. Connection is achieved by placing the loop over the button which retains the top waistband substantially over the pants waistband.

Preferably, the button has a short shaft, to reduce discomfort to the wearer caused by a long shaft digging into the skin. This can occur when the wearer is leaning upon the connector,
15 such as when sitting or stretching before or after surfing. More preferably the button is plastic or coated in plastic, to further reduce the discomfort to the wearer caused by metal buttons, which can get very hot from exposure to the sun's heat. The use of plastic is also preferred as it is not susceptible to rusting.

Notwithstanding the above, when the connection between the top and pants is in a resilient
20 form, it is possible for the first and second connectors to extend around both the front and rear of both the top and pants if desired. However, if the connection is a rigid one, the connectors should be located either in the front or rear of the top or pants as otherwise the wearer, especially in surfing, will have their movement significantly inhibited.

It will be understood that the connectors may be any type that can carry out the function
25 described above.

Description of the drawings

The invention will now be further explained and illustrated by reference to the accompanying drawings in which:

Figure 1 is a front view of the garments according to one form of the invention;

Figure 2 is a front view of the garments according to another form of the invention; and

Figure 3 is a front view of the garments according to yet another form of the invention.

The garments 1 have a top 2 which covers much of the upper torso of the user, pants 3 which cover at least a part of the lower torso and legs of a user and a resilient connecting system 4. The top 2 is often made of a stretchy fabric as this facilitates easy movement by the wearer. The resilient connectors 4 are located on either side of the rear of the top 2 and pants 3.

The resilient connectors 4 have an elastic loop 5 which is attached at one end to the underside of the rear of the top 2. The resilient connectors are in two parts, the first having a protrusion 6 with a head 7. For example this could be a stud riveted to the outside of the pants 3. The loop 5 is extended over the head 7 and then contracts around the base of the protrusion 6 which is located nearest the pants 3. This resilient connecting system 4 ensures that the top 2 and the pants 3 remain connected until it is desired that they be disconnected. In order to disconnect the top 2 and the pants 3, it is necessary to extend the loop 5 to enable it to be passed over the head 7 of the protrusion 6.

Both the loop 5 and the protrusion 6 are located a small distance from the bottom and top respectively of the top 2 and pants 3 respectively. This ensures that when the top 2 and the pants 3 are connected by the resilient connecting system 4, a gap does not form between them.

If the resilient connecting system 4 is located on the front of the garments 1, it will be important to ensure that they do not dig in to the wearer or rub the wearer. This will be particularly important if the garments are used for surfing or boogie boarding.

Another form of the invention is shown in Figure 2 in which the garments 10 have a top 11 and a pair of shorts 12. The top 11 is a short sleeved top and the shorts 12 are a pair of board shorts. A resilient connecting system 13 is located on either side of the rear of the garments 10 and enables resilient detachable attachment of the top 11 and the shorts 12.

The resilient connecting system 13 has a loop 14 with an engaging member 15, and a hole or eyelet 16. In order to resiliently attach the top 11 and the shorts section 12, the engaging member 15 is threaded through the eyelet 16. The eyelet 16 and the engaging member 15

are shaped to ensure that when the engaging member 15 is threaded through the eyelet 16, the engaging member 15 will not unintentionally slip out through the eyelet 16. If the eyelet 16 is not stretchable and the engaging member 15 is not flexible this will help prevent unintended disconnection of the top 11 and the shorts 12.

- 5 The resilience of the resilient connecting systems 4/13 provides additional comfort and flexibility for the wearer whilst also assisting in ensuring that the top 2/11 and shorts 3/12 are not unintentionally disconnected or expose skin therebetween to harmful sunlight.

In yet another form of the invention as shown in Figure 3, the garments 20 have a top 21 and a pair of shorts 22. The connecting system 23 comprises a pair of Velcro tabs 24 and
10 25 located either on the front or rear of the garments. In use these tabs 24 and 25 engage to maintain the connection between the top 21 and shorts 22. As indicated in the Figure, the tabs 24 are located on the underside of the top 21. Whilst in this arrangement the connecting system 23 is less extensible than the earlier discussed forms, it nevertheless still permits the desired connection and protection of the skin of the wearer from sun exposure.

- 15 The word 'comprising' and forms of the word 'comprising' as used in this description and in the claims do not limit the invention claimed to exclude any variants or additions.

Modifications and improvements to the invention will be readily apparent to those skilled in the art. Such modifications and improvements are intended to be within the scope of this invention.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A garment top for covering at least a part of the torso of a wearer, the top comprising a waistband located at and extending about the front and rear lower extremity of the top; and a first connector located on or adjacent the waistband in
5 either the front or rear lower extremity of the top for connection with a second connector on a pair of pants.
2. A garment top according to claim 1 suitable for use in water sports.
3. A garment top according to claim 1 wherein the top is at least in part constructed of stretchable material.
- 10 4. A garment top according to claim 1 wherein the top is at least in part constructed of lycra or neoprene.
5. A garment top according to claim 1 wherein the top is a rash vest.
6. A garment top according to claim 1 wherein the first connector comprises one or more connector devices.
- 15 7. A garment top according to claim 6 wherein the first connector is adapted to provide a resilient connection between the top and the pants.
8. A garment top according to claim 6 wherein the first connector is fabricated at least in part from a resilient material.
9. A garment top according to claim 8 wherein the first connector comprises one or
20 more loops of elasticised material.
10. A garment top according to claim 9 wherein the one or more loops of elasticised material are attached to the upper edge of the waistband inside the top but not extending down below the lower edge of the top waistband.
11. A garment top according to claim 6 wherein a first connector comprises a loop with
25 an engaging member.
12. A garment top according to claim 11 wherein the engaging member is non-flexible.

13. A garment top according to claim 6 wherein the first connector comprises a headed protrusion.
14. A garment top according to claim 13 wherein the headed protrusion is a button.
15. A garment top according to claim 14 wherein the button is plastic or coated in plastic.
16. A garment top according to claim 6 wherein a first connector comprises a hole or eyelet.
17. A garment top according to claim 16 wherein the hole or eyelet is non-stretchable.
18. A garment top according to claim 6 wherein the first connector comprises one or more pieces of Velcro.
19. A garment top according to claim 6 wherein the waistband is reinforced.
20. A garment top according to claim 19 wherein the waistband is reinforced with rubber.
21. A garment top for covering at least a part of the torso of a wearer, the top comprising a waistband located at and extending about the front and rear lower extremity of the top; and a first resilient connector located on or adjacent the waistband in the lower extremity of the top for connection with a second connector on a pair of pants.
22. A garment top for covering at least a part of the torso of a wearer, the top comprising a waistband located at and extending about the front and rear lower extremity of the top; and a first connector located on or adjacent the waistband in the lower extremity of the sides of the top for connection with a second connector on a pair of pants.
23. A pair of pants for covering at least a part of the lower torso and legs of a wearer, the pants comprising a waistband located at and extending about the front and rear upper extremity of the pants; and a second connector located on or adjacent the waistband in either the front or rear upper extremity of the pants for connection with a first connector on a top.

24. A pair of pants according to claim 23 wherein the pair of pants are shorts.
25. A pair of pants according to claim 23 suitable for use in water sports.
26. A pair of pants according to claim 23 wherein the second connector comprises one or more connector devices.
- 5 27. A pair of pants according to claim 26 wherein the second connector is adapted to provide a resilient connection between the top and the pants.
28. A pair of pants according to claim 26 wherein the second connector is fabricated at least in part from a resilient material.
29. A pair of pants according to claim 28 wherein the second connector comprises one or more loops of elasticised material.
- 10 30. A pair of pants according to claim 29 wherein the one or more loops of elasticised material are attached to the lower edge of the waistband inside the pants but not extending above the upper edge of the pants waistband.
31. A pair of pants according to claim 26 wherein the second connector comprises a loop with an engaging member.
- 15 32. A pair of pants according to claim 31 wherein the engaging member is non-flexible.
33. A pair of pants according to claim 26 wherein the second connector comprises a headed protrusion.
34. A pair of pants according to claim 33 wherein the headed protrusion is a button.
- 20 35. A pair of pants according to claim 34 wherein the button is plastic or coated in plastic.
36. A pair of pants according to claim 26 wherein a second connector comprises a hole or eyelet.
37. A pair of pants according to claim 36 wherein the hole or eyelet is non-stretchable.
- 25 38. A pair of pants according to claim 26 wherein the second connector comprises one or more pieces of Velcro.

39. A pair of pants according to claim 26 wherein the waistband is reinforced.
40. A pair of pants according to claim 39 wherein the waistband is reinforced with rubber.
41. A pair of pants for covering at least a part of the lower torso and legs of a wearer,
5 the pants comprising a waistband located at and extending about the front and rear upper extremity of the pants; and a second resilient connector located on or adjacent the waistband on the upper extremity of the pants for connection with a first connector on a top.
42. A pair of pants for covering at least a part of the lower torso and legs of a wearer,
10 the top comprising a waistband located at and extending about the front and rear upper extremity of the pants; and a second connector located on or adjacent the waistband at the sides of the pants for connection with a first connector on a top.
43. A connectable top and pants combination comprising:
- 15 (a) a garment top for covering at least a part of the torso of a wearer, the top comprising:
- (i) a waistband located at and extending about the front and rear lower extremity of the top; and
- (ii) a first connector located on or adjacent the waistband in either the front or rear lower extremity of the top;
- 20 (b) a pair of pants for covering at least a part of the lower torso and legs of a wearer, the pants comprising:
- (i) a waistband located at and extending about the front and rear upper extremity of the pants; and
- (ii) a second connector located on or adjacent the waistband in either the
25 front or rear upper extremity of the pants.

wherein the first connector and second connector are engagable to connect the top and pair of pants.

44. A connectable top and pants combination according to claim 43 suitable for use in water sports.
45. A connectable top and pants according to claim 43 wherein each of the first and second connectors comprises one or more connector devices.
- 5 46. A connectable top and pants according to claim 43 wherein each of the connectors are positioned on the top and pants respectively such that when connected, a portion of the lower extremity of the top is caused to extend over a portion of the upper extremity of the pants.
47. A connectable top and pants according to claim 45 wherein each of the connectors
10 are adapted to provide a resilient connection between the top and the pants.
48. A connectable top and pants according to claim 47 wherein the resilient connection includes one of the connectors being fabricated at least in part by a resilient material and the other connector is a non-resilient material.
49. A connectable top and pants according to claim 47 wherein one of the connectors
15 comprises a loop of elasticised material attached to the top or the pants and the other connector comprises a protrusion over which the elasticised loop is retained.
50. A connectable top and pants according to claim 49 wherein the loop and the protrusion are located on the lower extremity of the top and upper extremity of the pants respectively to reduce any opening therebetween.
- 20 51. A connectable top and pants according to claim 47 wherein a resilient connecting system comprises a loop with an engaging member, and a hole or eyelet, located on either side of the rear of the top and pants respectively and enables detachable attachment of the top and pants.
52. A connectable top and pants according to claim 47 wherein the resilient connecting
25 system comprises a loop with a non-flexible engaging member, and a non-stretchable hole or eyelet.
53. A connectable top and pants according to claim 52 wherein the connectors are located on the top and the pants respectively such that when connected, a portion of

the lower extremity of the top is caused to extend over a portion of the upper extremity of the pants.

54. A connectable top and pants according to claim 47 wherein the resilient connecting system comprises a headed protrusion, and a non-stretchable hole or eyelet.
- 5 55. A connectable top and pants according to claim 54 wherein the headed protrusion is a button and the hole is a buttonhole.
56. A garment top according to claim 47 wherein each connector comprises one or more pieces of Velcro.
57. A connectable top and pants combination comprising:
- 10 (a) a garment top for covering at least a part of the torso of a wearer, the top comprising:
- (i) a waistband located at and extending about the front and rear lower extremity of the top; and
- (ii) a first connector located on or adjacent the waistband at the lower
- 15 extremity of the top;
- (b) a pair of pants for covering at least a part of the lower torso and legs of a wearer, the pants comprising:
- (i) a waistband located at and extending about the front and rear upper extremity of the pants; and
- 20 (ii) a second connector located on or adjacent the waistband at the upper extremity of the pants.

wherein the first connector and second connector are resiliently engagable to connect the top and pair of pants.

58. A connectable top and pants combination comprising:
- 25 (a) a garment top for covering at least a part of the torso of a wearer, the top comprising:

- (i) a waistband located at and extending about the front and rear lower extremity of the top; and
 - (ii) a first connector located on or adjacent the waistband in the lower extremity of the sides of the top;
- 5 (b) a pair of pants for covering at least a part of the lower torso and legs of a wearer, the pants comprising:
 - (i) a waistband located at and extending about the front and rear upper extremity of the pants; and
 - (ii) a second connector located on or adjacent the waistband in the upper
10 extremity of the sides of the pants.

wherein the first connector and second connector are engagable to connect the top and pair of pants.

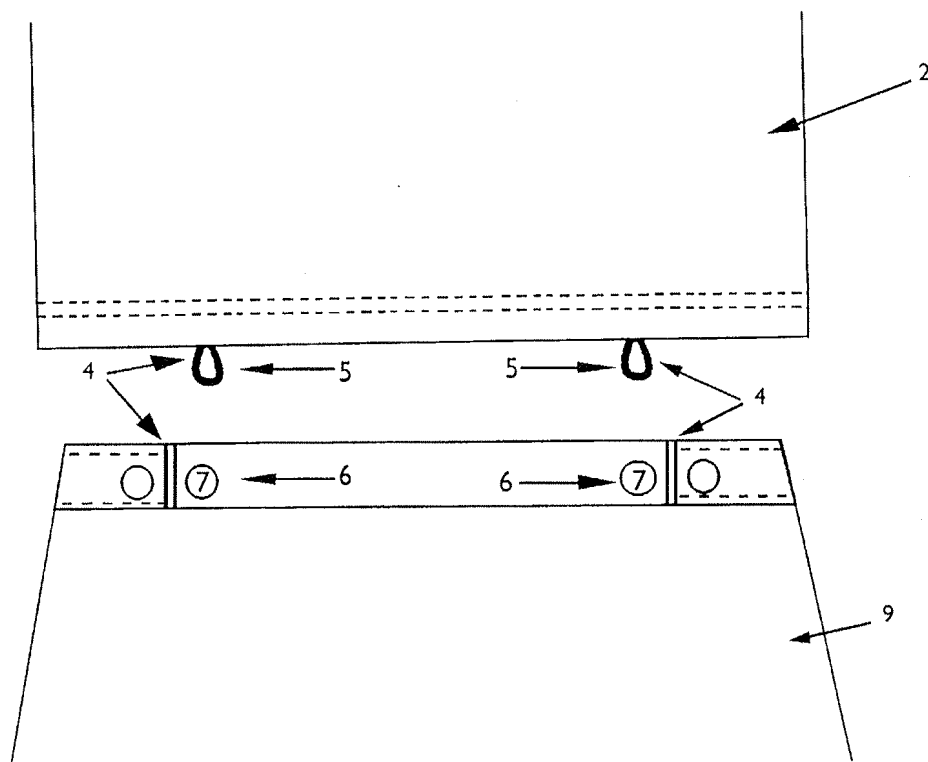


FIGURE 1

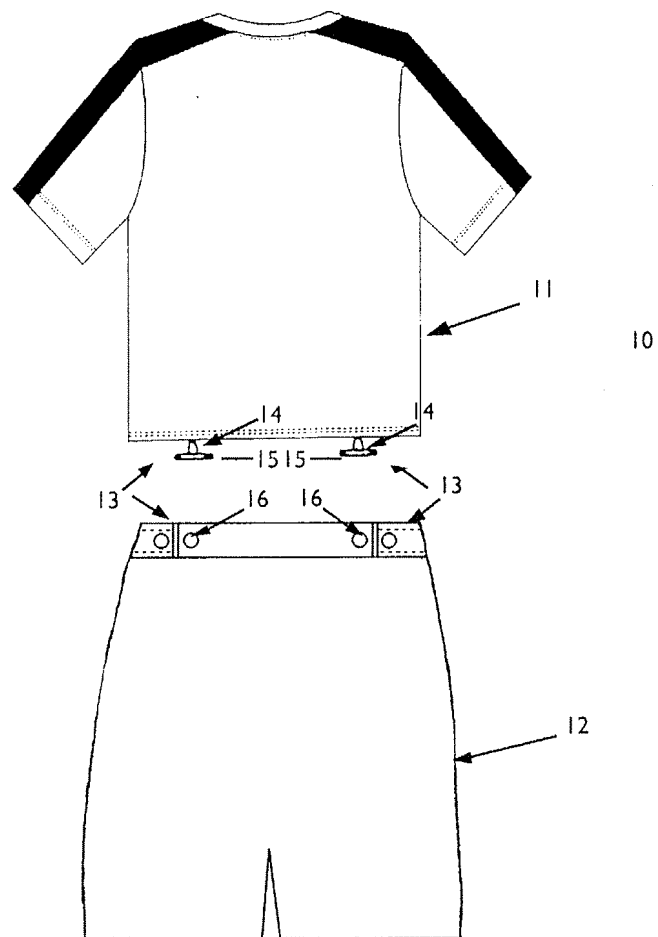


FIGURE 2

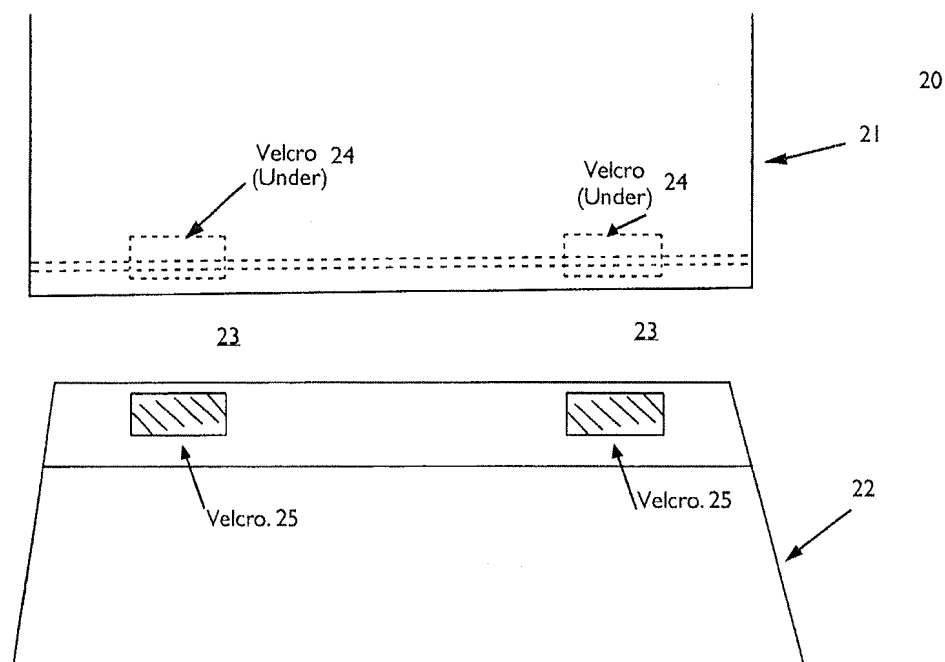


FIGURE 3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU 99/01055

A. CLASSIFICATION OF SUBJECT MATTER																						
Int Cl ⁷ : A41D 7/00, A41B 1/06, A41F 5/00, 17/00																						
According to International Patent Classification (IPC) or to both national classification and IPC																						
B. FIELDS SEARCHED																						
Minimum documentation searched (classification system followed by classification symbols) A41D 7/00, A41B 1/06, A41F 5/00, 17/00																						
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched AU: IPC AS ABOVE																						
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) WPAT + keywords																						
C. DOCUMENTS CONSIDERED TO BE RELEVANT																						
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.																				
X	US 4656669A (Beard) 14 April 1987	1-4,6-58																				
X	US 5083316A (Kuehner) 28 January 1992	1-4,6-58																				
X	US 4815145A (Chow) 28 March 1989	1-4,6-58																				
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input type="checkbox"/> See patent family annex																						
<p>* Special categories of cited documents:</p> <table border="0"> <tr> <td>"A"</td> <td>document defining the general state of the art which is not considered to be of particular relevance</td> <td>"T"</td> <td>later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</td> </tr> <tr> <td>"E"</td> <td>earlier application or patent but published on or after the international filing date</td> <td>"X"</td> <td>document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</td> </tr> <tr> <td>"L"</td> <td>document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</td> <td>"Y"</td> <td>document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</td> </tr> <tr> <td>"O"</td> <td>document referring to an oral disclosure, use, exhibition or other means</td> <td>"&"</td> <td>document member of the same patent family</td> </tr> <tr> <td>"P"</td> <td>document published prior to the international filing date but later than the priority date claimed</td> <td></td> <td></td> </tr> </table>			"A"	document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	"E"	earlier application or patent but published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family	"P"	document published prior to the international filing date but later than the priority date claimed		
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"P"	document published prior to the international filing date but later than the priority date claimed																					
Date of the actual completion of the international search 24 January 2000		Date of mailing of the international search report 07 FEB 2000																				
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929		Authorized officer JON MILLS Telephone No.: (02) 6283 2113																				

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU 99/01055

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5033121A (Larsen) 23 July 1991	1,3,4,6-24,26-43,45-58
X	US 4074364A (Lucero) 21 February 1978	1,3,4,6-24,26-43,45-58
X	US 5495621A (Kibbee) 5 March 1996	1,3,4,6-24,26-43,45-58
X	FR 2594011 A1 (Guichard) 14 August 1987	1,3,4,6-24,26-43,45-58
X	FR 2559652 A1 (Enel Connection) 23 August 1985	1,3,4,6-24,26-43,45-58
X	FR 2682568 A1 (Reverberi) 23 April 1993	1,3,4,6-24,26-43,45-58